United States Department of Agriculture | Forest Service | Southwestern Region Forest Health Arizona Zone Office | 2500 S. Pine Knoll Drive Flagstaff, AZ 86001-6381 FAX (928) 556-2130 Voice (928) 556-2073

File Code: 3420 **Date:** September 20, 2007
Route To:

Subject: Douglas-fir Tussock Moth outbreak on the Tonto National Forest

To: Jerry Mastel, District Ranger Pleasant Valley District, Tonto National Forest

On August 1, 2007, I conducted a site visit to examine a Douglas-fir tussock moth (DFTM) outbreak in the Workman Creek area of the Pleasant Valley Ranger District, based on reports from the district recreation personnel. DFTM early warning traps were placed where they have been located since 1992 above the falls area; also two additional traps were placed in the recreation area below the falls. A defoliation survey transect (2 chains x 1 chain) was done from one end of the eastern recreation area to the other. Of seventy susceptible overstory trees evaluated only 4% had 0 -33% defoliation; about 22% had 34-66% defoliation, about 50% had greater that 66% defoliation but not completely defoliated and about 25% were completely defoliated. Susceptible understory trees were rated at 14%, 21%, 25% and 39% respectively. Understory trees generally are more completely defoliated because caterpillars drop from the infested overstory and feed on them.

On August 29, 2007, John Anhold, AZ FH Zone Leader, and I met with Jerry Mastel, Pleasant Valley District Ranger and Jim Mercer, Zone Silviculturist, to visit the DFTM outbreak. A field tour of the infested stands was conducted, followed by a discussion of the tussock moth outbreak and management options available to the District.

An early warning trapping system developed in the Pacific Northwest and placed in Workman and Reynolds creeks did not indicate rising populations in 2006, however, most of the traps in Workman were removed or destroyed by persons unknown prior to collection. The one trap that was still viable did not indicate a rising population. This could be due to the location of the trap some distance up canyon from the defoliation. Early warning trapping in Reynolds creek did not indicate a rising population and again this could be attributed to the traps being located considerably down canyon from the area that is currently being defoliated.

DFTM is a native defoliator of Douglas-fir and white fir. In the Pacific Northwest Douglas-fir is the preferred host but in the southwest white fir is preferred. There is one generation of this insect per year. Adults are present from late July into November. Female moths are flightless and remain where they have pupated on the foliage. They emit a pheromone that attracts the male. After mating a few up to 350 eggs are laid in a mass of a dry, tough, frothy substance containing many hairs from her body. The eggs overwinter and hatch at the time of bud break and shoot elongation, soon they begin to feed. The young larvae are very hairy and can be dispersed by wind action. The dispersal rarely exceeds a quarter of a mile. Young larvae require current year foliage but older larvae can complete their development on old foliage. Pupation

Printed on Recycled Paper

occurs from late July to the end of August throughout the foliage of host trees. The pupal stage lasts from 10 to 18 days.

Outbreaks of this insect have a four phase pattern: a release phase which probably occurred in 2006; a peak phase which usually only lasts one or two years when populations reach a maximum level; a decline phase characterized by a rapid decrease in population due to impacts of disease and natural enemies; and finally the insects return to the endemic phase where population levels are low and held in check by natural factors. Heavy defoliation of new foliage and complete defoliation by DFTM in the peak phase of the outbreak is often responsible for extensive tree mortality. The early warning trapping was designed to detect rising populations in the release phase so action could be taken prior to the peak phase. It is unclear whether this trapping system is adequate for use in the southwest or if another configuration would be preferable.

A photographic flyover of the area revealed that the infestation is much more widespread than what was observed in Workman Creek during our field tour. Photos and an aerial detection survey map are attachment to this letter.

Treatment to control an infestation after the peak population phase has begun is not recommended since most of the damage to the trees has already occurred. Salvage efforts might be warranted in this area if logistically and economically feasible. Removal of hazard trees especially in areas where dispersed camping and recreational activity occurs would be recommended.

We will continue to monitor this outbreak through pheromone trapping and our annual aerial detection surveys. If you have any questions about the outbreak or this report you can reach me at 928-556-2072 or bfitzgibbon@fs.fed.us.

/s/ Roberta Fitzgibbon
ROBERTA FITZGIBBON
Entomologist, Forest Health, Arizona Zone

cc: John Anhold
Debra Allen-Reid
MaryLou Fairweather
Joel McMillin
James A Mercer
Terry J Rogers
David A Conklin
Daniel E Ryerson Anhold
Debra Allen-Reid
MaryLou Fairweather

Joel McMillin
James A Mercer
Terry J Rogers
David A Conklin
Daniel E Ryerson